

REMARKS/ARGUMENTS

Favorable consideration of this application, as presently amended and in light of the following discussion, is respectfully requested.

Claims 1-20 are presently pending in this application, Claims 1-18 having been amended and Claims 19-20 having been newly added by the present amendment.

In the outstanding Office Action, Claims 1-18 were rejected under 35 U.S.C. §103(a) as being unpatentable over JP 2001-116936 (hereinafter "JP '936").

Claims 1-18 have been amended and Claims 19 and 20 have been newly added herein. These amendments and additions in the claims are believed to find their supports in the specification, drawing and claims as originally filed. For example, Claims 1, 4, 5, 8, 9, 14, 15 and 18 are believed to be supported by Figures 7 and 8 as well as page 10, lines 14-22, of the specification, Claims 19 and 20 are believed to be supported by page 20, lines 3-13, of the specification, and the other claims have been amended for clarification. Hence, no new matter is believed to be added thereby. If, however, the Examiner disagrees, the Examiner is invited to telephone the undersigned who will be happy to work in a joint effort to derive mutually satisfactory claim language.

Before addressing the outstanding Office Action, a brief summary of Claim 1 as currently amended is believed to be helpful. Claim 1 is directed to a waveguide type optical module and the waveguide type optical module has an optical waveguide, a temperature control element which controls a temperature of the optical waveguide, the temperature controlling element including a ceramic plate having a first surface and a second surface on the opposite side of the first surface, a pedestal supporting the temperature control element via the ceramic plate, and a casing encasing the optical waveguide, temperature control element and pedestal therein. The optical waveguide is provided on the first surface of the

ceramic plate, the second surface of the ceramic plate has one of a heater and a heat absorber provided on or buried in the second surface of the ceramic plate, and the pedestal supports the ceramic plate such that an area of contact by the pedestal is less than 30% of a second surface of the ceramic plate. By providing such a temperature controlling element, a temperature of the optical waveguide can be controlled accurately by quick response to a temperature change because of the high heat conductivity and smaller thickness realized by the ceramic plate.¹ Furthermore, because of a smaller thermal expansion coefficient of the ceramic plate and a smaller difference in thermal expansion between the ceramic plate and optical waveguide, the optical waveguide will not be broken or separated from the ceramic plate even at a high temperature.²

JP '936 is directed to a waveguide type optical module. Nevertheless, JP '936 neither teaches nor suggests "a temperature control element configured to control a temperature of the optical waveguide, the temperature controlling element comprising a ceramic plate and having a first surface and a second surface on an opposite side of the first surface ..., wherein the optical waveguide is provided on the first surface of the ceramic plate, the second surface of the ceramic plate has one of a heater and a heat absorber provided on or buried in the second surface of the ceramic plate, and the pedestal supports the ceramic plate such that an area of contact by the pedestal is less than 30% of a second surface of the ceramic plate" as recited in amended Claim 1. On the other hand, JP '936 simply describes a plate 10 made of a material of $\geq 100\text{W/m}\cdot\text{K}$ in heat conductivity and -5×10^{-6} to 5×10^{-6} in coefficient of linear expansion, and despite other materials such as various metals and resins, nowhere does JP '936 describes a ceramic plate. Therefore, the structure recited in Claim 1 as amended is believed to be distinguishable from JP '936.

¹ See, for example, Specification, page 10, line 14, to page 11, line 18.

² Id.

Because JP '936 fails disclose or suggest the temperature controlling element as recited in Claim 1, its teaching are not believed to render the structure recited in Claim 1 obvious.

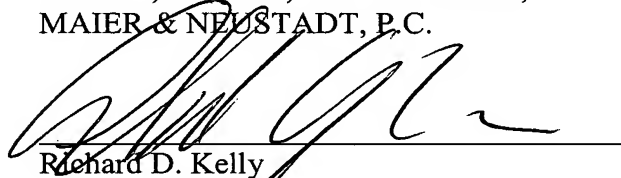
Likewise, Claims 5, 9 and 15 are believed to include subject matters substantially similar to what is recited in Claim 1 to the extent discussed above. Thus, Claims 5, 9 and 15 are also believed to be distinguishable from JP '936.

For the foregoing reasons, Claims 1, 5, 9 and 15 are believed to be allowable. Furthermore, since Claims 2-4, 6-8, 10-14 and 16-20 ultimately depend from these independent claims, substantially the same arguments set forth above also apply to these dependent claims. Hence, Claims 2-4, 6-8, 10-14 and 16-20 are believed to be allowable as well.

In view of the amendments and discussions presented above, Applicants respectfully submit that the present application is in condition for allowance, and an early action favorable to that effect is earnestly solicited.

Respectfully submitted,

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